

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark  
Office  
(Box PCT)  
Crystal Plaza 2  
Washington, DC 20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

<b>Date of mailing</b> (day/month/year) 20 July 1999 (20.07.99)	
<b>International application No.</b> PCT/SE98/00842	<b>Applicant's or agent's file reference</b> 970061PC
<b>International filing date</b> (day/month/year) 07 May 1998 (07.05.98)	<b>Priority date</b> (day/month/year) 10 November 1997 (10.11.97)
<b>Applicant</b> WAHLSTEN, Gunnar	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

31 May 1999 (31.05.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  F. Baechler  Telephone No.: (41-22) 338.83.38
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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00842

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04H 1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04H, G06F, H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5132989 A (GILLES BELLON), 21 July 1992 (21.07.92), column 1, line 16 - line 17; column 2, line 65 - column 3, line 32, figure 4	1-3,5-7
Y	Serge Fdida, Michele Morganti, "European Conference on Multimedia Applications, Services and Techniques - ECMAST' 97, May 21-23", 1997, ., (Milan, Italy), page 593 - page 607, see the whole document	1-3,5-7
P,A	GB 2313981 A (ROKE MANOR RESEACH LIMITED), 10 December 1997 (10.12.97), page 2, line 19 - page 3, line 2; page 5, line 18 - page 6, line 18; page 9, line 21 - page 10, line 20, figure 1, claims 1,4	1-3,5-7

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, etc. exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

6 Sept. 1998

Date of mailing of the international search report

11 -09- 1998

Name and mailing address of the ISA/

Swedish Patent Office

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Authorized officer

Per Källquist

Telephone No. + 46 8 782 25 00

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

PCT/SE 98/00842

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5132989 A	21/07/92	AU 640960 B	09/09/93
		AU 6550090 A	02/05/91
		DE 69019460 D,T	25/01/96
		EP 0425046 A,B	02/05/91
		SE 0425046 T3	
		FR 2653954 A	03/05/91
		JP 3159343 A	09/07/91
<hr/>			
GB 2313981 A	10/12/97	GB 9705123 D	00/00/00
		GB 9611830 D	00/00/00
		GB 9613404 D	00/00/00
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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 26 JAN 2000

WIPO PCT

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Applicant's or agent's file reference 970061PC	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE98/00842	International filing date (day/month/year) 07.05.1998	Priority date (day/month/year) 10.11.1997
International Patent Classification (IPC) or national classification and IPC <sub>7</sub> H 04 H 1/00		
Applicant Dobora Communication AB et al		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input checked="" type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand  31.05.1999	Date of completion of this report  24.11.1999
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer  Jaana Raivio/MN Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1994)

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE98/00842

**I. Basis of the report**

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

- ☒ the international application as originally filed.
- ☐ the description, pages \_\_\_\_\_, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the claims, Nos. \_\_\_\_\_, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the drawings, sheets/fig \_\_\_\_\_, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE98/00842

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-8</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-8</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-8</u>	YES
	Claims		NO

**2. Citations and explanations**

The claimed invention relates to a method for wireless transmission of data between computers, using DAB (Digital Audio Broadcast). More specifically, the invention concerns the problem of a computer not being able to receive a continuous DAB data stream. An adaptation circuitry to be used between the transmitting/receiving computers and a DAB transmitter/receiver is provided. The digital data is stored intermittently in a memory before it is fed, essentially continuously to the DAB transmitter, and the corresponding adaptation is executed at the receiving side, between the DAB receiver and the receiving computer.

Documents cited in the International Search Report:

D1: US 5132989 A

D2: Serge Fdida, M M, "European Conference on multimedia applications, services and techniques -ECMAST", May 21-23, 1997, pp. 593-607

D1 describes a method and circuitry for transmitting a sequence of M binary words formed by 'p' bits, by means of (N) codewords of bits of which the capacity is  $k \cdot p \cdot \Delta$  bits (k and p are integers and  $\Delta$  is less than p). At least one codeword comprises information denoting the value N and the value of  $N \cdot \Delta$  bits. D1 differs from the invention as claimed in claims 1-8 in that it fails to disclose the feature of storing information in a memory of an adaptation circuit between a computer and a DAB transmitter/receiver. Further, D1 does not show the feature of feeding data intermittently to this memory in order to enable a computer to retrieve the data intermittently from the memory. D1 also does not address the problem or solution of the claimed invention, namely enabling a computer to receive a continuous DAB data stream.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

D2 describes the use of DAB in, for example, file transfers to a computer.

In the International Search Report drawn by this Authority, documents D1 and D2 were found to be of particular relevance. However, this Authority has reconsidered this opinion and finds them to constitute the state of the art, since it can not be considered obvious to a person to combine these documents to obtain the claimed invention. The invention as claimed in claims 1-8 is, with reference to D1-D2, novel and considered to involve an inventive step. The invention as claimed in claims 1-8 is considered to have industrial applicability.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE98/00842

## VI. Certain documents cited

## 1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
GB 2313981	10/12/97	12/03/97	06/06/96

## 2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)
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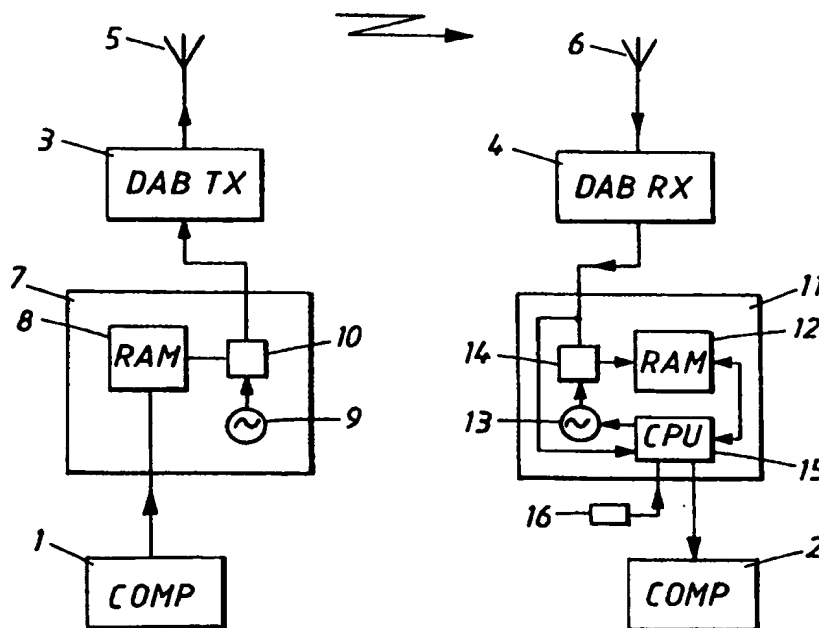
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>H04H 1/00</b>		A1	(11) International Publication Number: <b>WO 99/25083</b>
			(43) International Publication Date: 20 May 1999 (20.05.99)
(21) International Application Number: PCT/SE98/00842 (22) International Filing Date: 7 May 1998 (07.05.98) (30) Priority Data: 9704101-6 10 November 1997 (10.11.97) SE (71) Applicant (for all designated States except US): DOBORA COMMUNICATION AB [SE/SE]; P.O. Box 152, S-132 25 Saltsjö-Boo (SE). (72) Inventor; and (75) Inventor/Applicant (for US only): WAHLSTEN, Gunnar [SE/SE]; Ringvägen 9A, S-118 23 Stockholm (SE). (74) Agents: ÖRTENBLAD, Bertil et al.; Noréns Patentbyrå AB, P.O. Box 10198, S-100 55 Stockholm (SE).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  Published With international search report.	

(54) Title: A METHOD AND ARRANGEMENT FOR WIRELESS DATA TRANSMISSION

## (57) Abstract

A method for the wireless transmission of data between one computer and one or more other computers with the aid of the DAB system or a corresponding system for the wireless transmission of digital data, where the transmitting computer is connected to a DAB transmitter and where the receiving computer or computers is/are connected to a respective DAB receiver. The invention is characterized in that information that is outputted intermittently from the transmitting computer (1) is stored intermediately in a memory (8) of a first adaptation circuit (7) between the transmitting computer (1) and the DAB transmitter (3); in that information is outputted essentially continuously from said memory (8) to said DAB transmitter (3) under the control of an outfeed oscillator (9) in the adaptation circuit; in that transmitted information is received by a DAB receiver (4) and fed into a memory (12) in a second adaptation circuit (11) under the control of an infeed oscillator (13) in the second adaptation circuit (11); in that the two oscillators (9, 13) operate on mutually the same frequency or essentially the same frequency; and in that the receiving computer (2) is caused to fetch information intermittently from the memory (12) in the second adaptation circuit (11). The invention also relates to an arrangement for carrying out the method.



in that transmitted information is received by a DAB receiver (4) and fed into a memory (12) in a second adaptation circuit (11) under the control of an infeed oscillator (13) in the second adaptation circuit (11); in that the two oscillators (9, 13) operate on mutually the same frequency or essentially the same frequency; and in that the receiving computer (2) is caused to fetch information intermittently from the memory (12) in the second adaptation circuit (11). The invention also relates to an arrangement for carrying out the method.

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## A METHOD AND ARRANGEMENT FOR WIRELESS DATA TRANSMISSION

The present invention relates to a method and to an arrangement for wireless, data transmission. More specifically, the invention relates to the transmission of data by digital broadcasting transmissions.

The present invention relates primarily to a method and to an arrangement for transmitting data from one computer to one or more other computers with the aid of a radio transmitter and one or more receivers, so as to enable data to be transmitted in applications using equipment produced in accordance with the international standard DAB (Digital Audio Broadcast).

This standard DAB is described in prETS 300 401 radio Broadcasting Systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers, February, 1997. The invention is not limited to this standard, however, but can be applied equally as well with digital radio transmissions according to some other standard.

Frequencies are at present allotted to land-based DAB transmissions over the whole of Europe. The frequency spaces primarily used are TV channels in VHF band 111. Each DAB channel can transmit 2.304 Mbit/s gross, which corresponds, for instance, from five to six high-quality stereo programmes.

The modulation and signal processing technique chosen in accordance with the DAB standard is COFDM (Coded Orthogonal Frequency Division Multiplex), which enables all transmitters in a region-covering network to send the same signals on the

same frequency without creating interference problems due to co-channel interference.

According to this standard, the entire bit stream in the DAB signal is transmitted in frames that have a typical duration of 96 ms. Each frame combines data from three channels, namely from the main service channel MSC, from the fast information channel FIC and from the synchronization channel.

The main service channel MSC may contain both service information, ISO/MPEG-coded audio signals and general data transmission in packet mode or stream mode. A so-called multiplex controller determines how the various information components shall be combined. This control information is sent separately in the fast information channel FIC. The mutual division between the information components can be controlled dynamically in accordance with requirements. The information channel FIC also discloses how data in the main service channel shall be interpreted at each moment in time.

The entire main service channel MSC can be used, in principle, for data transmission, giving a net bit rate of 1.2 to 1.5 Mbit/s.

The DAB standard is primarily intended to enable six to seven high-quality stereo radio programmes to be transmitted in each DAB channel of about 2 Mhz, although the distribution of the content of a DAB channel, called an ensemble, can be allocated dynamically and used for purposes other than the transmission of digitalized and compressed sound channels. The standard also provides space for the transmission of data in greater or smaller parts of a DAB channel, either with a

limited transmission requirement in the form of packet switched data quantities in a simpler case, or for the highest data rate of up to 2 Mbit/s when the entire ensemble is disposed for data transmission in a stream mode.

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According to the foregoing, the DAB system should be capable of transmitting digital data from one computer to one or more other computers, at a rate of up to 1.5 Mbit/s.

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One serious problem in this regard, however, is that a computer is not designed to receive a more or less continuous DAB data stream, since a computer that typically includes the standardized PCI bus is designed to perform PCI bus transactions in the form of bursts.

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The present invention solves this problem and enables data to be transferred between computers with the aid of the DAB system.

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Many computers are, at present, connected to cable networks or tele-networks for the exchange of information between different computers. When several computers shall receive certain information from one computer, this latter computer must be connected to each of the other computers in an ordered sequence. This is both time-consuming and expensive.

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The cost of transmitting ether-carried information with the aid of the present invention can be drastically reduced while many receivers can be reached simultaneously.

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An example of one application is found in the transmission of price information from a wholesaler in the daily commerce to

all stores, shops, etc., that belong to the wholesaler. The use of ether-bound information transmission would enable all price information to be sent to all stores at one and the same time and also very quickly. Another obvious application is found in the distribution of news and advertisements, i.e. principally in a newspaper.

Another important advantage would be afforded if a receiver need not be stationary but can be mobile. One example in this respect is found in rescue services and police services, to particular benefit. Information concerning a rescue service, emergency service, or a police service could be sent to mobile units, i.e. to rescue vehicles and police cars. Such transmission would facilitate the co-ordination of personnel, etc., in rescue operations and police operations of comprehensive magnitude, by virtue of all parties concerned receiving updated information simultaneously.

However, the present invention is not limited to any particular application, but can be used in any context where information shall be transmitted between computers.

The present invention thus relates to a method for the wireless transmission of data between one computer and one or more other computers with the aid of the DAB system or a corresponding system for the digital, wireless transmission of data, wherein the transmitting computer is connected to a DAB transmitter, wherein the receiving computer or the receiving computers is/are connected to a respective DAB receiver, and wherein the method is characterized in that information outputted intermittently from the transmitting computer is stored intermediately in a memory in a first

adaptation circuit, between the transmitting computer and the DAB transmitter, in that information is fed from said memory to the DAB transmitter essentially continuously under the control of an outfeed oscillator in the adaptation circuit, in that transmitted information is received by a DAB receiver and fed into a memory in a second adaptation circuit under the control of an input oscillator in said second adaptation circuit, in that the two oscillators operate on the same or essentially the same frequency, and in that the receiving computer is caused to take information intermittently from the memory store in the second adaptation circuit.

The invention also relates to an arrangement that has the main features defined in Claim 5.

The present invention will now be described in more detail with reference to exemplifying embodiments thereof and also with reference to the accompany drawing, in which Figure 1 is a block schematic illustrating a transmitter side and a receiver side.

Shown in the Figure is an arrangement for the wireless transmission of data between a computer 1 and one or more other computers 2 with the aid of the DAB system or a corresponding system for the wireless transmission of digital data. Such a corresponding system may be a system for digital TV transmissions. The transmitting computer 1 is connected to a known DAB transmitter 3 that has a transmitter antenna 5. The receiving computer or computers 2 is/are connected to a respective known DAB receiver 4 that has a receiver antenna 6.

The inventive arrangement includes a first adaptation circuit 7 between the transmitting computer 1 and the DAB transmitter 3. The adaptation circuit 7 is adapted for the intermediate storage of information outputted intermittently from the transmitting computer 1 in a memory 8 belonging to said adaptation circuit. The memory may be a RAM memory or a FIFO memory. The adaptation circuit is also adapted to take information from the memory 8 and feed this information to the DAB transmitter 3 generally continuously under the control of an outfeed oscillator 9 in the adaptation circuit 7. The oscillator 9 controls the outfeed of information from the memory 8 to the DAB transmitter 3, via an outfeed circuit 10 of some suitable known kind.

A second adaptation circuit 11 is provided between respective DAB receivers 4 and receiving computers 2. This second adaptation circuit 11 is adapted to feed information received by the DAB receiver 4 into a memory store 12 in the second adaptation circuit under the control of an infeed oscillator 13 in said second adaptation circuit. The oscillator 13 controls the infeed of information from the DAB receiver 4 to the memory 12, via an infeed circuit 14 of some suitable known kind. The memory 12 may be a RAM memory or a FIFO memory.

The two oscillators 9, 13 are adapted to operate at mutually the same frequency, or at essentially the same frequency, in accordance with the DAB standard.

The receiving computer 2 is adapted to fetch information intermittently from the memory 12 in the second adaptation circuit.



In one preferred embodiment, the oscillator 13 in the second adaptation circuit 11 is adapted to be synchronized with the oscillator 9 in the first adaptation circuit, by locking the frequency of the second oscillator 13 to a reference included in the received signal. This can be achieved by including in the second adaptation circuit 11 a microprocessor 15 that functions to detect the signal received by the DAB receiver and to decode a predetermined part of said received signal that constitutes said reference and therewith activate the oscillator 13.

In one preferred embodiment, the microprocessor 15 is adapted to determine from a FIC (Fast Information Channel) in the DAB system those parts of the received signal that contain data. The microprocessor is also adapted to store received data in the memory 12 of said adaptation circuit.

In one embodiment, the microprocessor 15 includes software that causes the received information to be structured and stored in the memory 12 in a form that enables a standard PC 2 to fetch information from the memory 12. Alternatively, the software can be installed in the personal computer, PC.

In one highly preferred embodiment, the microprocessor 15 in the second adaptation circuit 11 is adapted to identify information that is relevant to the receiving computer 2 and that includes identification of address information and possibly also authorization.

It is thus possible to address one or more of all computers that are connected to a DAB receiver 4.

This enables, for instance, a convenience goods wholesaler or dealer who sends information relating to prices of goods found in shops or stores throughout the country concerned to chose to send price information to stores in different parts of the country, when the prices of goods vary in different parts of the country at mutually different times.

The possibility of detecting authorization is achieved by programming the microprocessor so that it will only feed received information into the memory 12 when the information received includes an authorization code. This authorization can be given, for instance, by providing a subscriber that has a DAB receiver with a smart card that is read by a card reader 16 connected to the microprocessor 15 and containing said authorization code. The microprocessor is, in this regard, adapted to compare an authorization code received by the DAB receiver with the authorization code entered by means of the smart card. This embodiment can be used, for instance, when the information transmitted includes various types of news. Only subscribers that have paid for their subscription and therewith obtained a smart card which includes a valid authorization code can receive the transmitted information.

Thus, the information to be transmitted is stored intermediately in the memory of the first adaptation circuit. The information to be transmitted is sent via the DAB system in a more or less continuous form, whereas information is delivered intermittently from the transmitting computer 1, as before mentioned. Thus, the information is outputted to the DAB transmitter from said memory 8 essentially continuously and under the control of the outfeed oscillator 9. Transmitted information is thus received by the DAB receiver

in an essentially continuous form, and is fed into the memory in the second adaptation circuit 11 under the control of the infeed oscillator 13. The receiving computer is then caused to fetch information intermittently from the memory in the second adaptation circuit.

The present invention thus enables information to be transmitted via the DAB system, or some corresponding system for the wireless transmission of data, at high speed and in a more or less continuous form between standard computers, such as typical personal computers, PCs, which are not constructed to output and input data essentially continuously but, instead, constructed to output and input information in bursts.

The present invention thus solves the problem mentioned in the introduction.

Adaptation circuits 7, 11 have been described in the foregoing. These circuits may be physically separate units or may comprise an electronic card that can be mounted in a PC or some other computer. Naturally, the invention does not solely apply to personal computers and can be applied to all types of computers.

The adaptation circuit may, of course, be constructed in many different ways for achieving the aforescribed function. It will be obvious to the person skilled in this art that the structural design of the adaptation circuits can vary.

The present invention is thus not limited to the aforescribed exemplifying embodiments thereof since

variations and modifications can be made within the scope of the following Claims.

## CLAIMS

1. A method for the wireless transmission of data between one computer and one or more other computers with the aid of the DAB system or a corresponding system for the wireless transmission of digital data, where the transmitting computer is connected to a DAB transmitter and where the receiving computer or computers is/are connected to a respective DAB receiver, **characterized** in that information that is outputted intermittently from the transmitting computer (1) is stored intermediately in a memory (8) of a first adaptation circuit (7) between the transmitting computer (1) and the DAB transmitter (3); in that information is outputted essentially continuously from said memory (8) to said DAB transmitter (3) under the control of an outfeed oscillator (9) in the adaptation circuit; in that transmitted information is received by a DAB receiver (4) and fed into a memory (12) in a second adaptation circuit (11) under the control of an infeed oscillator (13) in the second adaptation circuit (11); in that the two oscillators (9, 13) operate on mutually the same frequency or essentially the same frequency; and in that the receiving computer (2) is caused to fetch information intermittently from the memory (12) in the second adaptation circuit (11).

2. A method according to Claim 1, **characterized** in that the oscillator (13) in the second adaptation circuit (11) is caused to be synchronized with the oscillator (9) in the first adaptation circuit (7), by locking the frequency of the second oscillator (13) onto a reference included in the received signal.

3. A method according to Claim 1 or 2, **characterized** in that the second adaptation circuit (11) includes a microprocessor (15) which is caused to determine from a fast information channel (FIC) in the DAB system those parts of the received signal that contain data, and to cause the received data to be stored in the memory (12) of the second adaptation circuit (11).

4. A method according to Claim 3, **characterized** in that the microprocessor (15) of the second adaptation circuit (11) is caused to identify information that is relevant to a receiving computer (2) and that includes identification of address information and possibly also authorization.

5. An arrangement for the wireless transmission of data between a computer and one or more other computers with the aid of the DAB system or some corresponding system for the wireless digital transmission of data, where the transmitting computer is connected to a DAB transmitter and where the receiving computer or computers is/are connected to a respective DAB receiver, **characterized** by a first adaptation circuit (7) between a transmitting computer (1) and the DAB transmitter (3), said circuit being adapted to store information delivered intermittently from the transmitting computer (1) intermediately in a memory (8) that belongs to said first adaptation circuit (7); in that the adaptation circuit (7) is adapted to output the information from said memory (8) to said DAB transmitter (3) essentially continuously under the control of an outfeed oscillator (9) in the adaptation circuit (7); in that the arrangement includes a second adaptation circuit (11) between DAB receiver (4) and receiving computer (2) respectively, said

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second adaptation circuit (11) being adapted to input information received by the DAB receiver (4) into a memory (12) in the second adaptation circuit (11) under the control of an infeed oscillator (13) in said second adaptation circuit (11); in that the two oscillators (9, 13) operate at the same or essentially the same frequency; and in that the receiving computer (2) is adapted to fetch information intermittently from the memory (12) in the second adaptation circuit (11).

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6. An arrangement according to Claim 5, **characterized** in that the oscillator (13) in the second adaptation circuit (11) is intended to be synchronized with the oscillator (9) in the first adaptation circuit (7), by locking the frequency of the second oscillator (13) to a reference included in the received signal.

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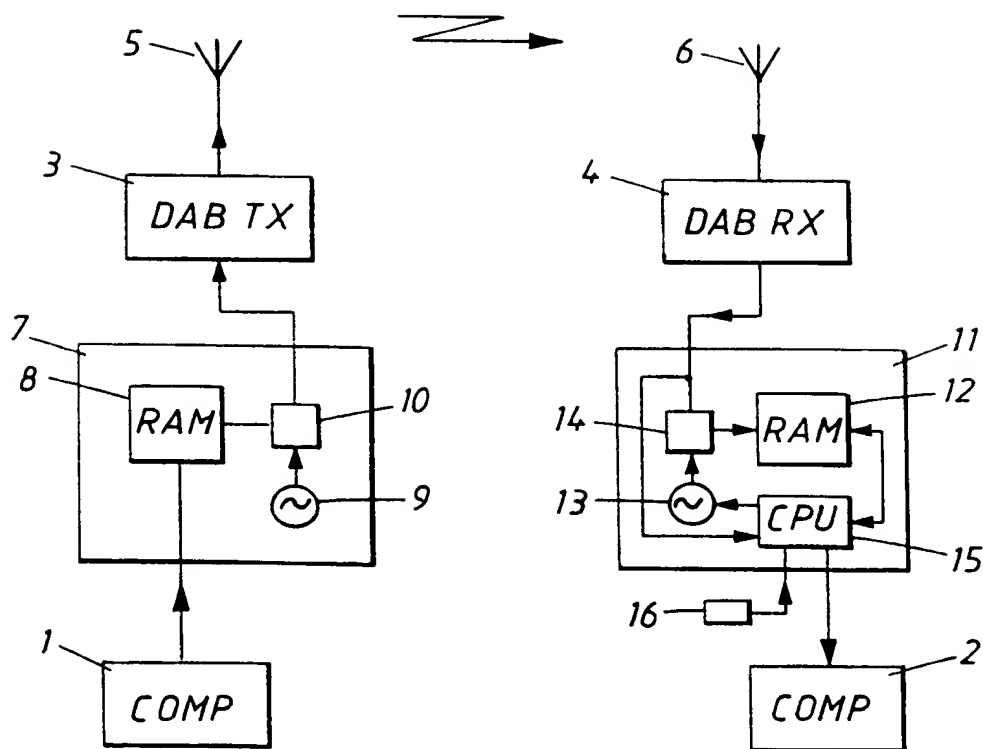
7. An arrangement according to Claim 5 or 6, **characterized** in that the second adaptation circuit (11) includes a microprocessor (15) which is adapted to decide from a fast information channel (FIC) in the DAB system which parts of the received signal contain data, and to store received data in the memory (12) of the second adaptation circuit (11).

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8. An arrangement according to Claim 7, **characterized** in that the microprocessor (15) in the second adaptation circuit (11) is adapted to identify information that is relevant to receiving computer (2) and that includes identification of address information and possibly also authorization.

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*Fig. 1*



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00842

## A. CLASSIFICATION OF SUBJECT MATTER

**IPC6: H04H 1/00**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC6: H04H, G06F, H04L**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**SE,DK,FI,NO classes as above**

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5132989 A (GILLES BELLON), 21 July 1992 (21.07.92), column 1, line 16 - line 17; column 2, line 65 - column 3, line 32, figure 4  --	1-3,5-7
Y	Serge Fdida, Michele Morganti, "European Conference on Multimedia Applications, Services and Techniques - ECAST' 97, May 21-23", 1997, ., (Milan, Italy), page 593 - page 607, see the whole document  --	1-3,5-7
P,A	GB 2313981 A (ROKE MANOR RESEACH LIMITED), 10 December 1997 (10.12.97), page 2, line 19 - page 3, line 2; page 5, line 18 - page 6, line 18; page 9, line 21 - page 10, line 20, figure 1, claims 1,4  --	1-3,5-7

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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"&" document member of the same patent family

Date of the actual completion of the international search

**6 Sept 1998**

Date of mailing of the international search report

**11-09-1998**

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE 98/00842

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		GB 9611830 D	00/00/00
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